

We claim:

1. A method for making an extruded metal honeycomb article comprising the steps of:  
heating a metal feed stock to a temperature effective to provide a softened bulk metal feed charge;  
forcing the feed charge into and through an array of feedholes provided in a body plate of a honeycomb extrusion die;  
thereafter forcing the feed from the feedholes through an intersecting array of discharge slots connecting with the feedholes in a discharge section of the honeycomb extrusion die, thereby to shape the charge into a metal extrudate comprising an interconnected wall structure forming a two-dimensional array of channels and channel walls for a metal honeycomb; and  
cooling the extrudate to a temperature below the softening temperature of the metal feed stock.
2. A method in accordance with claim 1 wherein the honeycomb extrusion die comprises die entrance surfaces and/or die internal surfaces that are inclined toward the direction of metal flow through the die.
3. A method in accordance with claim 1 wherein at least the feedholes are provided with at least one of (a) chamfered inlet surfaces and (b) release coatings or lubricants effective to limit the feedhole wall drag coefficient to a value not exceeding  $10^3$  psi-s/inch.
4. A method in accordance with claim 3 wherein the release coating is a vapor-deposited or liquid applied coating selected from the group consisting of graphite suspensions, soap lubricants, phosphate polymers, polymer-graphite mixtures, metal nitride vapor coatings, metal carbide vapor coatings, and metal carbonitride vapor coatings.
5. A method in accordance with claim 3 wherein the release coating is a vapor deposited coating consisting of a combination of TiCN and alumina.

6. An extruded metal honeycomb article comprising:
  - a channeled metal body of unitary structure incorporating a two-dimensional array of parallel channels extending in a third dimension from a first end face to a second end face of the body, the channels being spaced to provide a honeycomb cell density of at least 10 cells per square inch of honeycomb cross-section as measured transverse to the direction of the channels in the array; and
  - interconnecting channel walls defining the channels, the channel walls being of a thickness in the range of about 0.001-0.1 inches, being formed of a bulk metal having a porosity below 5% by volume, and being substantially free of channel wall discontinuities in directions transverse to the direction of honeycomb channel orientation in the article.
7. An extruded metal honeycomb article in accordance with claim 6 having a composition selected from the group consisting of aluminum, aluminum alloys, copper, and copper alloys.
8. An extruded metal honeycomb article in accordance with claim 7 wherein the channels have a cross-sectional shape selected from the group consisting of round, polygonal of 3-8 sides, polygonal of 3 to 8 sides with rounded corners, and internally finned shapes.
9. An extruded metal honeycomb article in accordance with claim 7 wherein the channels are of square or triangular cross-sectional shape.
10. An extruded metal honeycomb article in accordance with claim 6 which is a catalyst support.
11. An extruded metal honeycomb article in accordance with claim 6 which is a heat exchange structure.